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Snake River Birds of Prey

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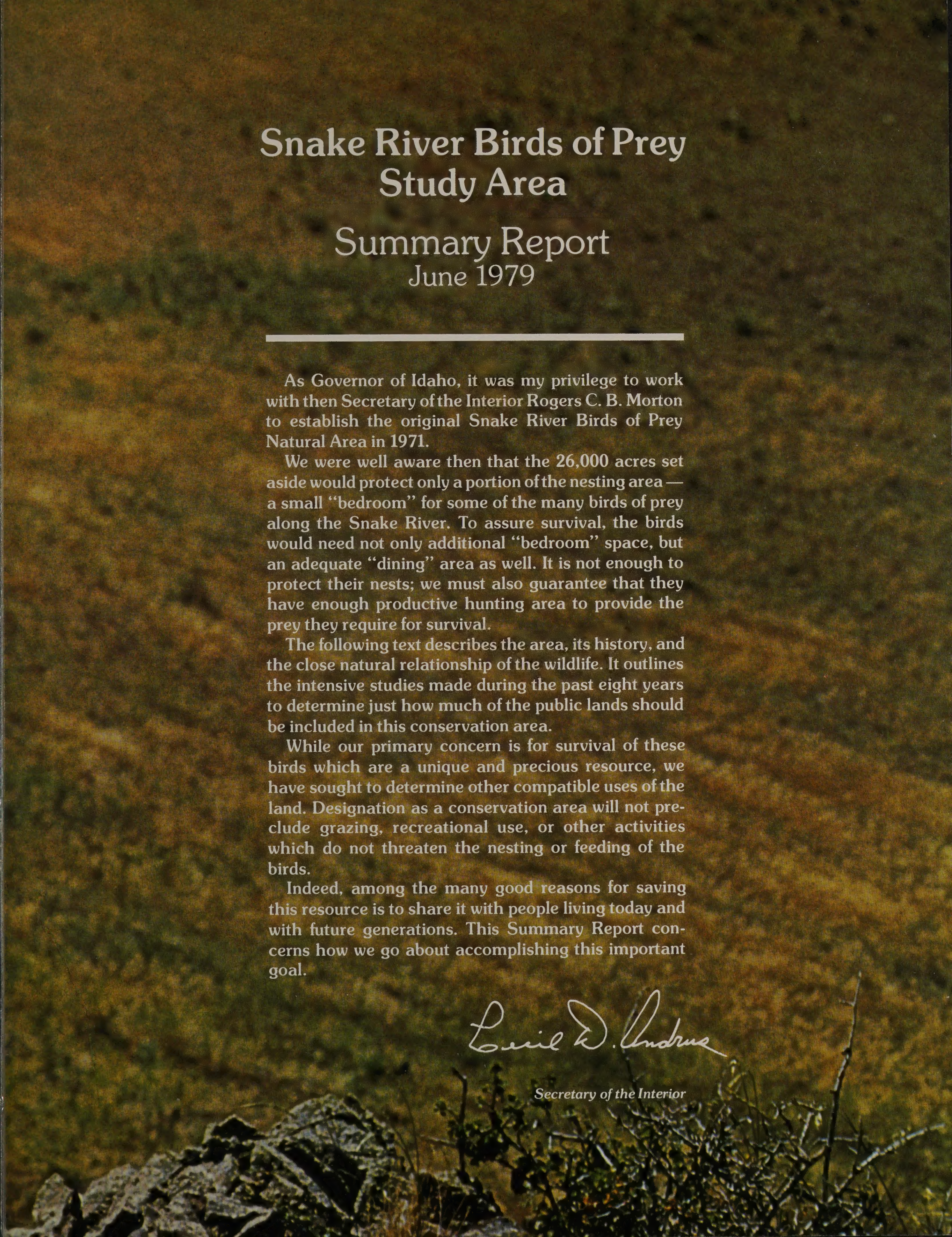
Golden eagle/David Ellis



Snake River Birds of Prey Study Area

Summary Report

June 1979

As Governor of Idaho, it was my privilege to work with then Secretary of the Interior Rogers C. B. Morton to establish the original Snake River Birds of Prey Natural Area in 1971.

We were well aware then that the 26,000 acres set aside would protect only a portion of the nesting area — a small "bedroom" for some of the many birds of prey along the Snake River. To assure survival, the birds would need not only additional "bedroom" space, but an adequate "dining" area as well. It is not enough to protect their nests; we must also guarantee that they have enough productive hunting area to provide the prey they require for survival.

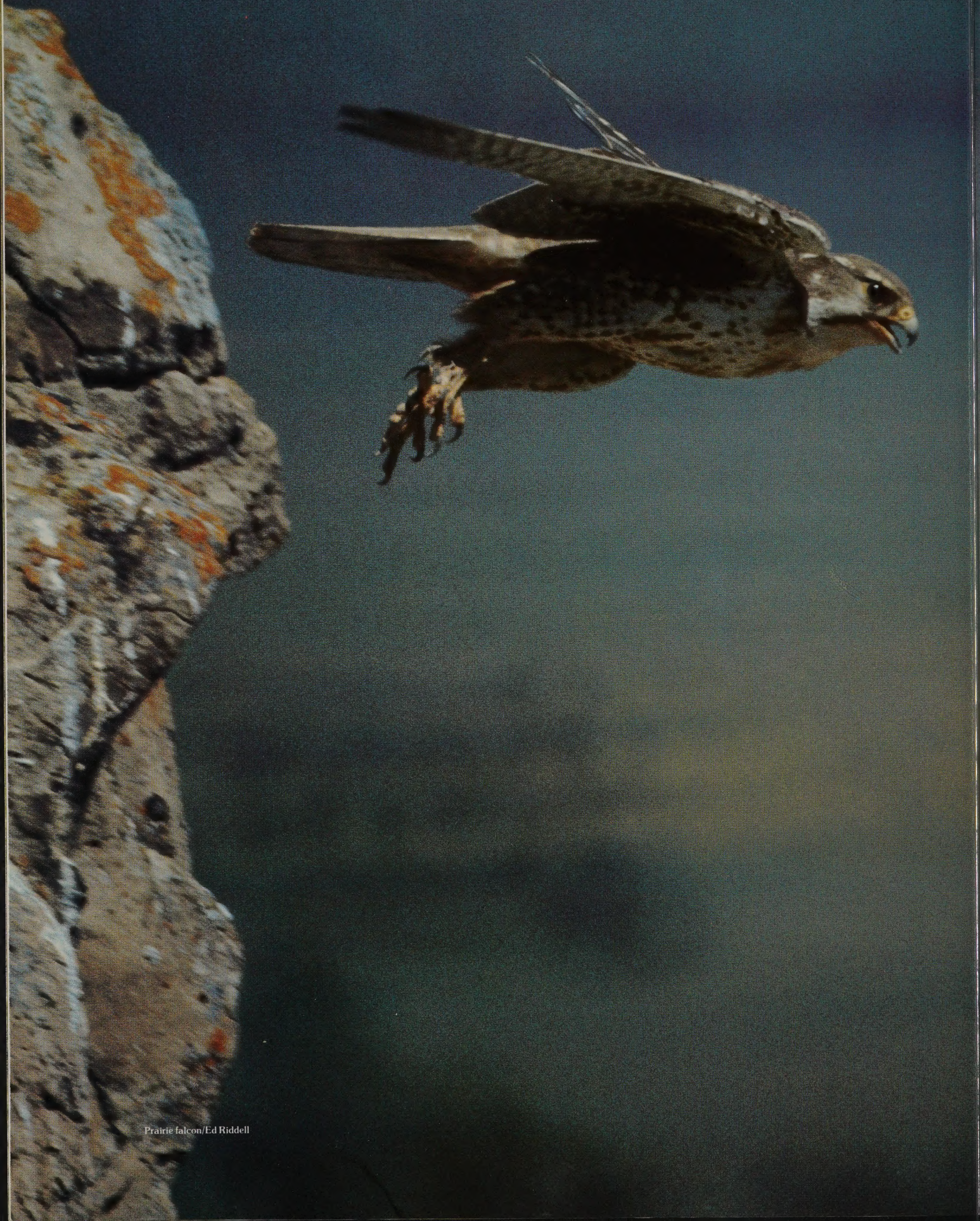
The following text describes the area, its history, and the close natural relationship of the wildlife. It outlines the intensive studies made during the past eight years to determine just how much of the public lands should be included in this conservation area.

While our primary concern is for survival of these birds which are a unique and precious resource, we have sought to determine other compatible uses of the land. Designation as a conservation area will not preclude grazing, recreational use, or other activities which do not threaten the nesting or feeding of the birds.

Indeed, among the many good reasons for saving this resource is to share it with people living today and with future generations. This Summary Report concerns how we go about accomplishing this important goal.

Cecil D. Andrus

Secretary of the Interior



Prairie falcon/Ed Riddell

The Snake River Birds of Prey Study Area

The Snake River rises on the west slope of the continental divide in Yellowstone Park, Wyoming. It flows in a wide arc across the breadth of Idaho enroute to its confluence with the Columbia River at approximately river mile 324 from the Pacific Ocean.

The Snake River canyon in southwestern Idaho lies within the rain shadow of the Cascade Mountains some 300 miles to the west in the State of Oregon. The canyon was formed by two million years of river downcutting through successive layers of volcanic and sedimentary rock to depths of 800 feet. Lands stretching back from the rim, particularly to the north, are covered with a mantle of deep, finely textured soils deposited by Pleistocene winds which lifted fine sediments from the dry beds of ancient lakes and rivers.

The river canyon environment, desert-like climate, deep soils and shrub-grass vegetation support an amazing variety and number of wildlife. More than 250 species have been identified, including mule deer, a variety of raptorial and passerine birds, coyotes, badgers, skunks, rabbits, ground squirrels and a large, diverse population of snakes, lizards, toads and fish.

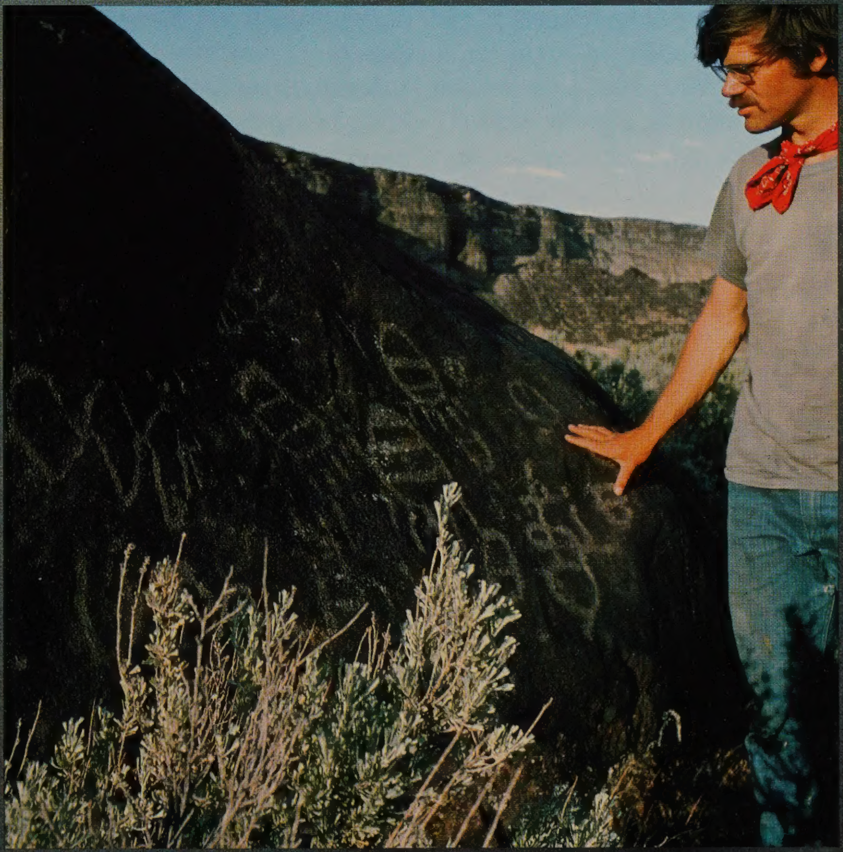
Two endangered species, the bald eagle and peregrine falcon, are found here, as well as ten species considered "sensitive" by the Idaho Department of Fish and Game, i.e., spotted bat, ferruginous hawk, osprey, merlin (pigeon hawk), long-billed curlew, western burrowing owl, bobcat, river otter, western ground snake and the white sturgeon which reaches ten feet in length and 600 pounds in weight.

But it is the large number and variety of birds of prey which nest in the canyon and hunt the surrounding lands that make the area a unique ecosystem of national and international renown. Approximately 600 pairs representing fifteen species annually nest in an eighty-one mile reach of the canyon. These include golden eagles, prairie falcons, red-tailed, ferruginous, marsh and Swainson's hawks, American kestrels, turkey vultures, barn, great horned, short-eared, screech, burrowing and long-eared owls and ravens.

Other raptors seasonally using but not nesting in the canyon include bald eagles, peregrine falcons, American rough-legged hawks, goshawks, osprey, sharp-shinned and Cooper's hawks and merlin.

The complex mix of geographic location, geology, physical features, climate, soils, and plant and animal communities creates an environment ideally suited to birds of prey. It is duplicated nowhere else in North America, and according to many international authorities, nowhere else in the world.

The fractured, pitted rock of the sheer canyon walls provides ideal nesting sites for raptors. The



Thomas Dunstan

The Snake River canyon in southwestern Idaho was intensively occupied by prehistoric American Indians. Smooth, rounded boulders deposited in the canyon by the spillover of ancient Lake Bonneville (Great Salt Lake is the remaining remnant) provided ideal surfaces for thus far inscrutable Indian petroglyphs. More than 100 archaeological sites within the Snake River Birds of Prey Study Area are currently on the National Register of Historic Places and hundreds more are potentially eligible.

Bill Mullins

In 1901, Swan Falls Dam was constructed on the Snake River within what is now the Snake River Birds of Prey Study Area. It was built to generate electricity for silver mines in the nearby Owyhee Mountains. Water impounded behind the comparatively small dam greatly expanded what under natural conditions had been very limited riparian habitat for a variety of birds, mammals and reptiles. The dam still generates electricity for Idaho consumers, and is one of several historic sites within the study area that are on the National Register of Historic Places.

shrub-grass steppe beyond the canyon rim supports numerous small mammals, birds and reptiles which provide a smorgasbord of prey for nesting raptors and their young.

Much of the land adjacent to the north rim of the canyon is densely populated with colonies of Townsend ground squirrels. These prolific little mammals are important prey for a variety of birds of prey and larger mammals. They are critical to the large nesting population of prairie falcons.

It is unusual for raptors to have their prey located above their nests. This is the reverse of the normal scheme of things, and is an important energy conservation feature of the area. Prevailing winds against the canyon walls create vertical updrafts which adult birds use to effortlessly lift themselves out of the canyon to hunting areas beyond the rim. At the end of a successful hunt, they drop down to their nests instead of expending precious energy lifting their prey to high cliff eyries.

By the late 1940's, falconers were coming to the area to obtain limited numbers of young prairie falcons and golden eagles. The unusually large number of birds of prey and the spectacular canyon environment have attracted several major motion picture and television producers, including

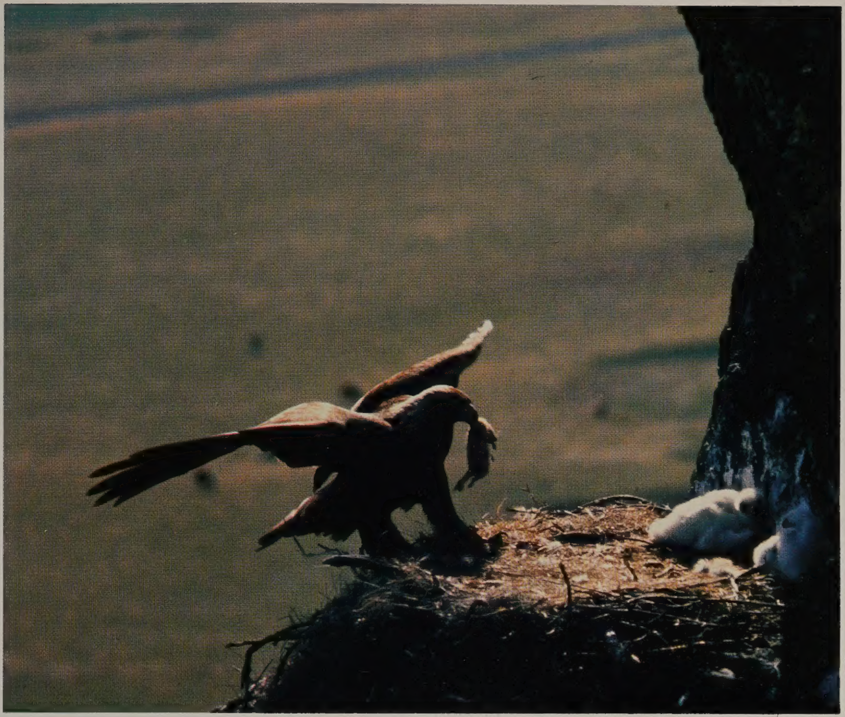
Walt Disney Productions, Paramount Pictures, Time-Life's *Wild, Wild World of Animals* and Mutual of Omaha's *Wild Kingdom*.

Long aware of the unique birds of prey population, in 1971 the Department of the Interior dedicated 26,000 acres of public land encompassing thirty-three miles of the Snake River canyon as the Snake River Birds of Prey Natural Area to protect known raptor nesting and wintering habitat.

The following year BLM began a comprehensive study of all birds of prey within the natural area to gather information on basic management and research needs. It quickly became clear the natural area boundaries included only a portion of the major concentration of nesting raptors. And further, that it did not include the lands extending far back from the canyon rim where the nesting birds hunted their prey.

To remedy that omission, in 1974 the Bureau established the Snake River Birds of Prey Study Area. It encompassed approximately 484,600 acres of public, state and private land extending about five miles on either side of an eighty-one mile reach of the Snake River. The study area included the original natural area and 278,000 additional acres of public land considered potentially critical raptor prey habitat.

East-west boundaries of the study area were designed to encompass the densest concentration of nesting birds of prey. To determine north-south boundaries, the Bureau consulted with independent experts for estimates on how far raptors could be expected to hunt on either side of the canyon. Their estimates ranged from two to ten miles and averaged seven.



David Ellis

At this early stage, predator/prey habitat relationships had not been precisely defined. However, it was clear the unique population of birds of prey was the product of canyon nesting sites in combination with, not independent of, the abundant prey, particularly ground squirrels and jackrabbits, inhabiting adjacent shrub-grasslands.

These publicly owned shrub-grasslands were in great and growing demand for conversion to private farmland under homesteading laws enacted in the 1800's.

Irrigated lands in southern Idaho produce a bounty of potatoes and other crops, but few ground squirrels and jackrabbits.

For example, upstream from the study area near Twin Falls, Idaho, the land extending back from the Snake River canyon rim has been converted from native shrub-grass vegetation to intensively cultivated crop land. These lands support little of the raptors' preferred prey, and consequently, few eagles and falcons inhabit the area despite the availability of abundant canyon nesting sites.

To safeguard raptors nesting and hunting within the study area, the Bureau in 1975 imposed a moratorium on disposal of public land to private farm developers pending completion of the birds of prey research effort.

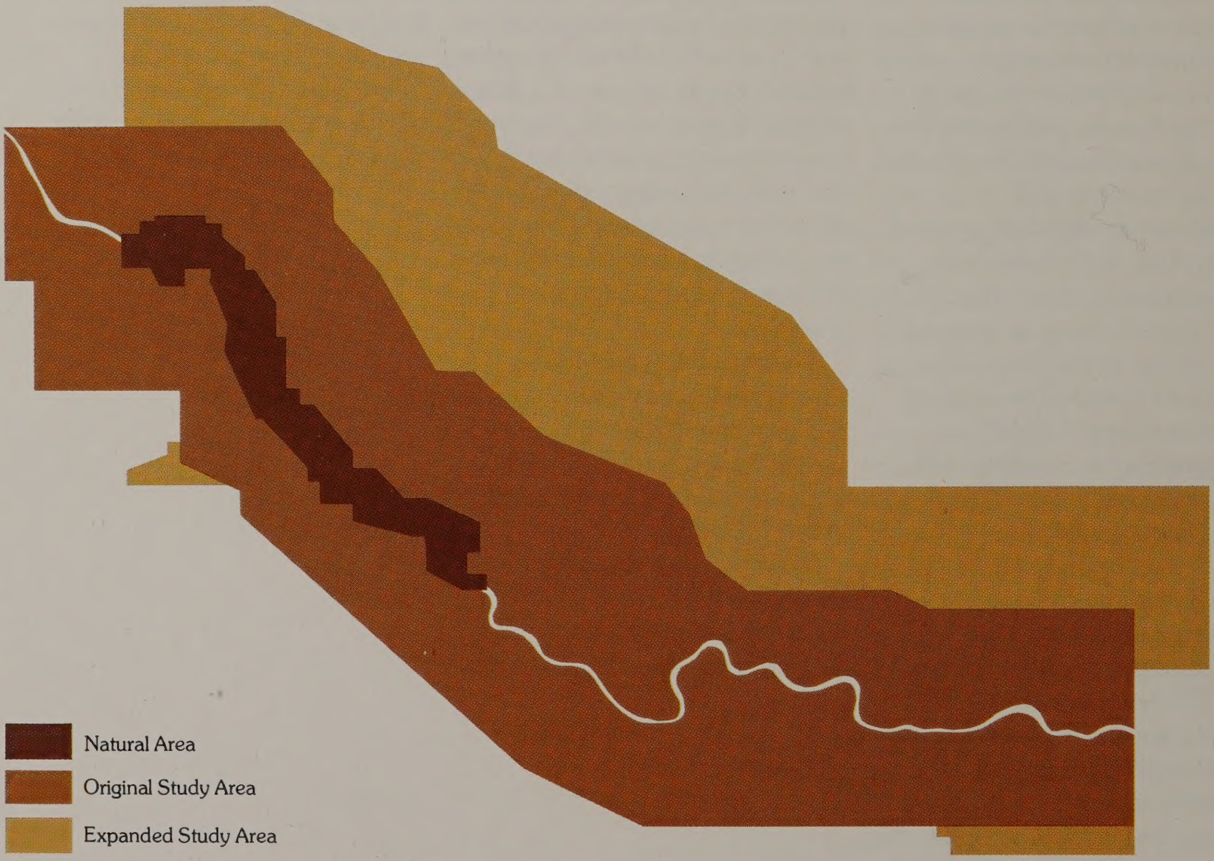
By 1977 researchers found they had greatly underestimated raptor hunting ranges, particularly those of prairie falcons which by then had been monitored hunting as far as fifteen miles from the canyon. It was clear the original study area was not large enough to encompass hunting territories potentially critical to the nesting birds of prey.

In the fall of 1977, Interior Secretary Andrus directed BLM to suspend any action that would alter the prey habitat on an additional 234,000 acres of public land. This addition increased the amount of public land within the Snake River Birds of Prey Study Area to a total of about 539,000 acres temporarily protected from disposal to private individuals pending the mid-1979 completion of the ongoing research.

The expanded study area boundaries now included about 833,000 acres of public, state and private land. Only public land was affected by the Secretary's directive.

The principal goal of the research was to determine the minimum amount of land required to maintain the nesting population of birds of prey and the complex ecosystem in which they play a primary role.

Toward that end, researchers had three major, interrelated objectives: (1) to understand the interactions of the complex ecosystem, including where the birds nest, what and how much they eat, where they get their prey, and prey habitat requirements; (2) with the benefit of that information, to determine the amount and kinds of habitats necessary to sustain the unique



Thomas Dunstan

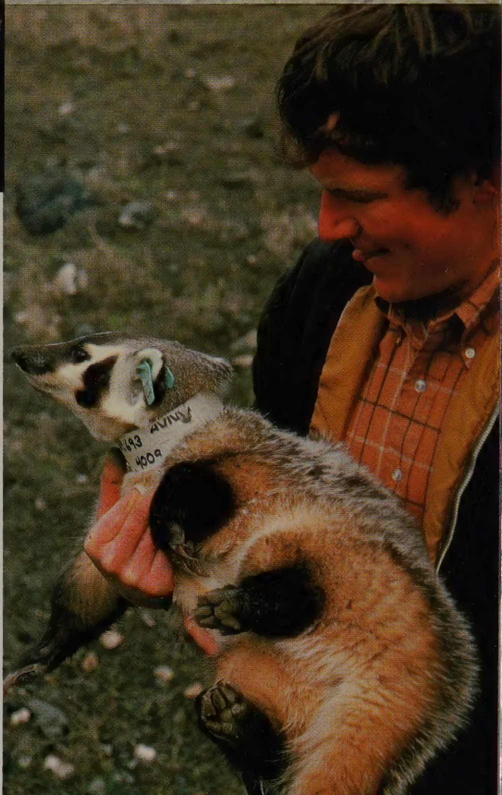
nesting population of raptors over the long term, including calamitous, worst-case conditions; and (3) to develop the information and insight required to design a long-term multiple public use management plan for the ecosystem.

The research effort was divided into thirteen major, interrelated studies conducted by BLM specialists or under close Bureau coordination by independent scientists drawn from various colleges and universities.

Each study was designed to provide a key piece of insight into the complex, interlocking jigsaw puzzle of interactions that comprise the birds of prey ecosystem, including analyses of the relationship between canyon cliff height and raptor nesting density; raptor species composition, population dynamics, reproduction, energy requirements, food habits and hunting ranges; the types, density and habitat preferences of the raptors' mammalian, avian and reptilian prey; and, interactions among raptors and their principal competitors for prey, coyotes and badgers.

David Ellis

Al Bammann



Thomas Dunstan

Coyotes, ravens and badgers compete with raptors for prey. The birds of prey study area was found to contain one of the densest known badger populations. Researchers attribute the large number of these aggressive animals to the presence of ideal burrowing soils and abundant Townsend ground squirrels for which the badgers compete with numerous birds of prey, particularly prairie falcons. Researchers fitted trapped badgers with radio transmitters and other tags to aid in determining population dynamics, habitat use, social organization and food habits.

Dave Boehlke

Birds of prey may have the keenest vision of all living creatures. Their eyes can rapidly adjust focus while they are moving at high speeds. Their relatively large eyes, very dense concentrations of cones and a high ratio of optic nerve fibers to visual cells contribute to resolving power four to eight times that of the human eye. This would allow, for example, a bird of prey to spot a jackrabbit at a distance of two miles or more.

To determine nesting density, researchers canvassed by aircraft, boat and on foot all potential nesting cliffs throughout the study area. Each year observed nesting densities far exceeded those recorded elsewhere in the U.S.

Many of the eyries first observed in use in the early 1940's were still occupied in 1978. Some researchers believe this stable nesting population could serve as a production center supplying young birds to repopulate less consistently favorable habitats throughout the West.

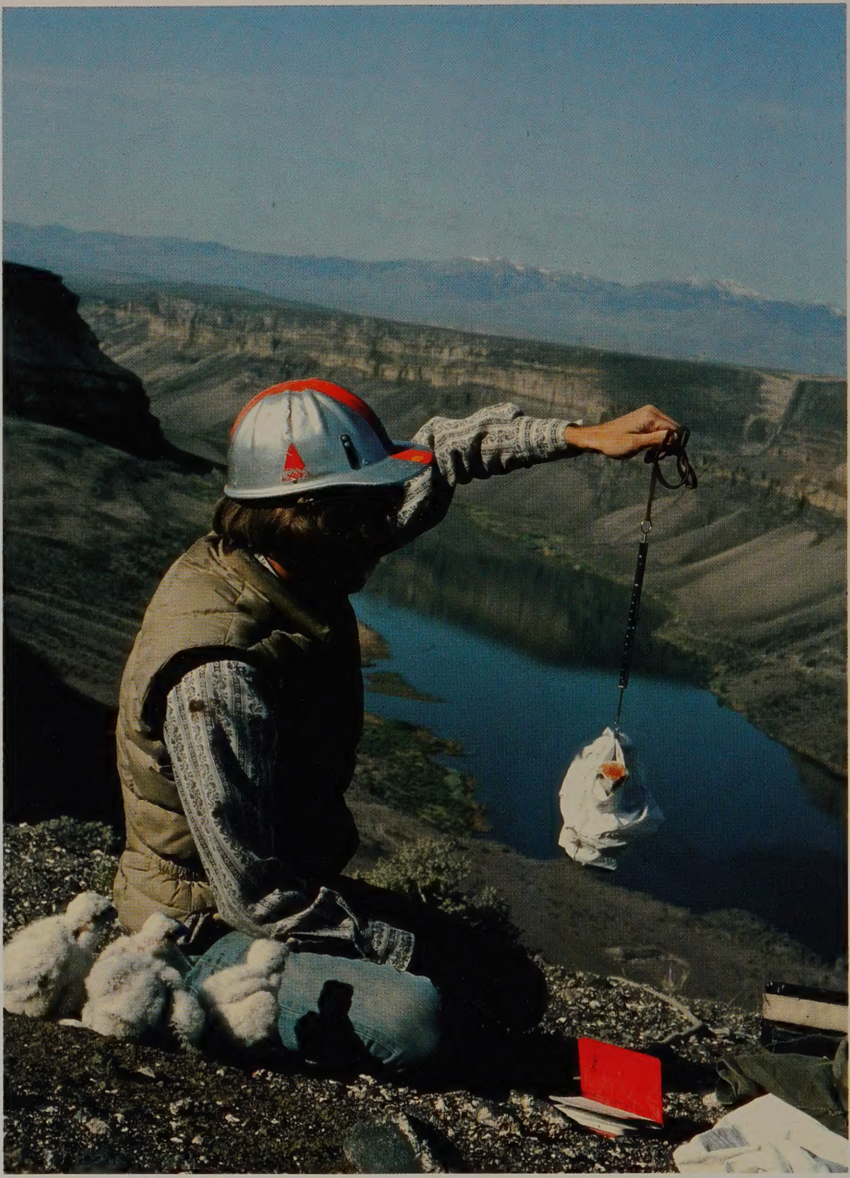
Once all active birds of prey nest sites were located, several eyries of different species were selected for detailed observation. Through the use of observation blinds and remote controlled cameras and by roping down cliffs to physically inspect study nests, researchers gathered information on reproductive success, feeding habits, diet and survival of young birds.

The large number of nesting prairie falcons, more than 200 in 1976 and 1977, is one of the most unique features of the Snake River birds of prey ecosystem.

Unlike most other raptors in the area, prairie falcons are very specialized hunters. Townsend ground squirrels were found to comprise up to 75% of nestling prairie falcon diets with other rodents, birds, reptiles and insects making up the remainder.

The biological clocks of prairie falcons and Townsend ground squirrels are very closely synchronized.

Adult prairie falcons arrive in the study area to court, mate and nest at about the same time adult Townsend ground squirrels



Gayle Sitter

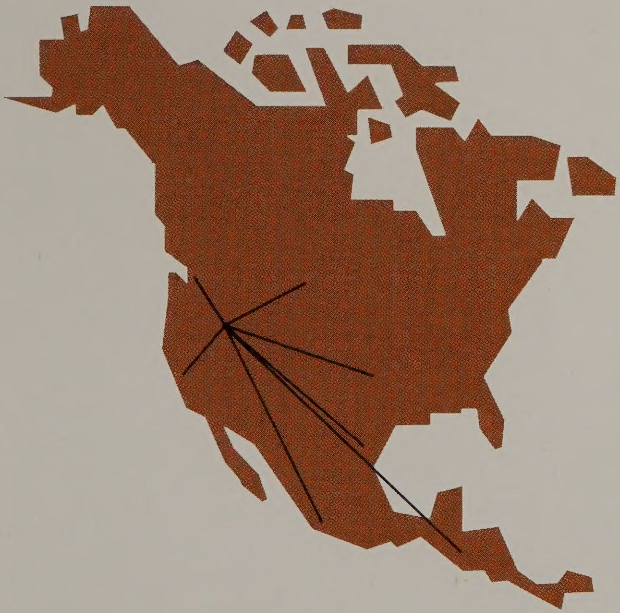
Nesting Density in Four Major North American Birds of Prey Areas

Area	Study Area Size	No. Pairs	No. Species	Density
Central Utah	80 mi^2	40*	12	0.5/mi^2
Superior Co., Michigan	37 mi^2	64	9	1.7/mi^2
Colville River, Alaska	183 linear mi	140*	4	1.3 linear mi
Snake River canyon within Birds of Prey Study Area	98 mi^2 (81 linear mi)	575*	15	5.9/ mi^2 (7.1 linear mi)

*Includes ravens.

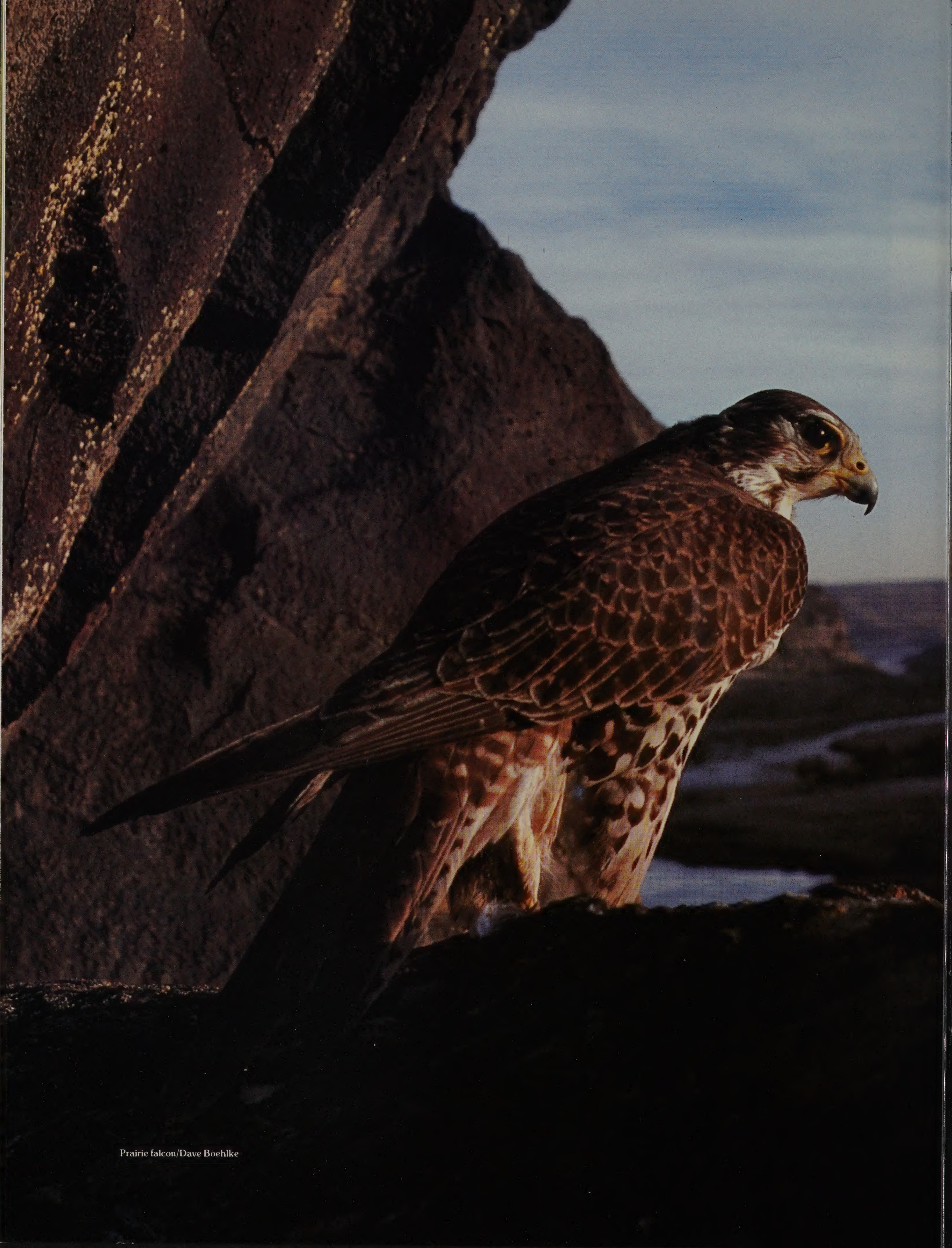
TRIPLE BEAM

Thomas Dunstan



Raptors banded and tagged in the Snake River Birds of Prey Study Area have been found as far east as Kansas, as far north as Washington and Montana, and as far south as Guatemala, Central America.

James F. Harper



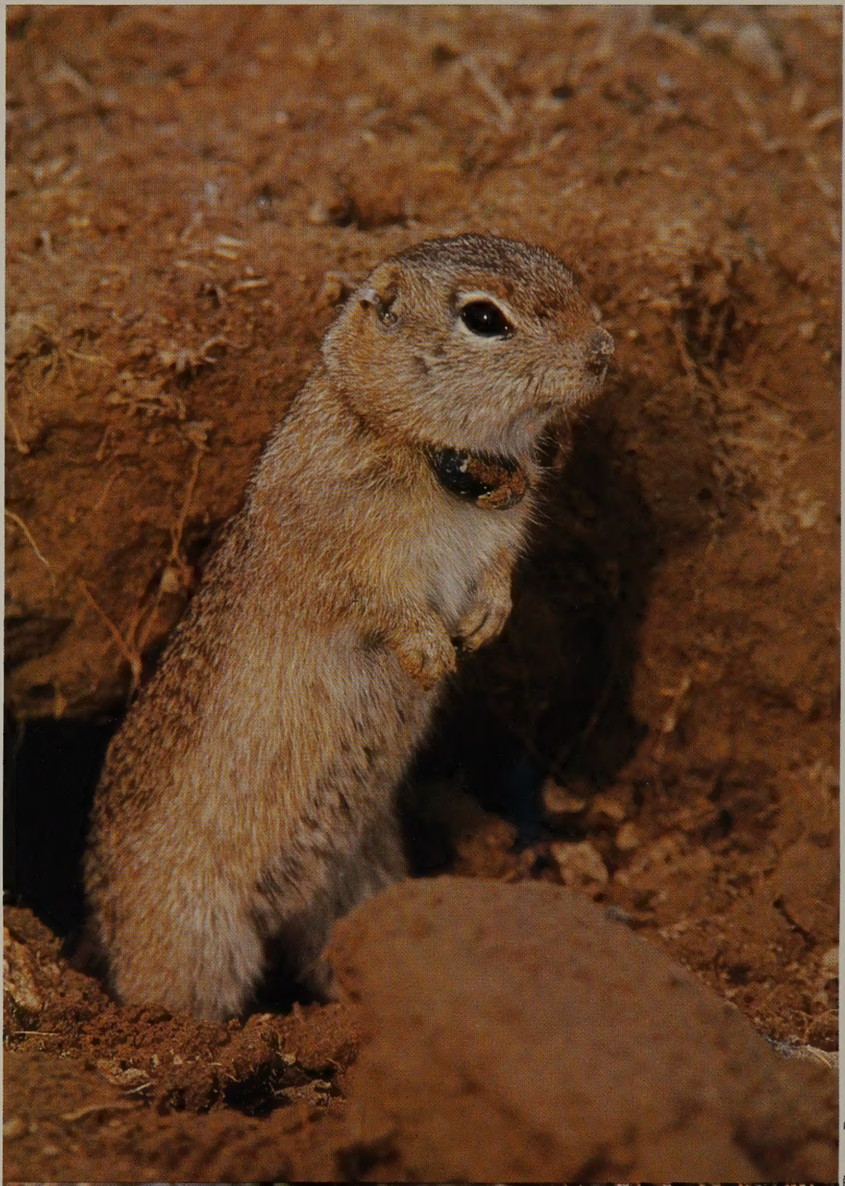
Prairie falcon/Dave Boehlke

emerge from hibernation to mate in the shrub-grasslands adjacent to the Snake River canyon.

Young prairie falcons hatch and adults enter a frenzy of hunting activity within a fortnight of the time young ground squirrels begin emerging from their burrows.

As the hot summer sun robs grass and other green plants of nutritive value, ground squirrels prepare for hibernation in their burrows. Concurrently, large numbers of adult and young-of-the-year prairie falcons begin to leave the study area.

Black-tailed jackrabbits were found to make up over 50% of golden eaglet diets with cottontail


Thomas Dunstan

Townsend ground squirrels were fitted with tiny radio transmitters as part of comprehensive life history research.

David Ellis

Despite their natural camouflage, fleetness afoot and the shrub overstory of their preferred habitat, black-tailed jackrabbits comprise more than half the diets of golden eagles in the birds of prey study area.

Gus Wolfe

Thomas Dunstan

rabbits and ring-necked pheasants each contributing about 11%. Townsend ground squirrels, marmots and other small mammals and birds comprised the remainder.

Red-tailed hawk diets consisted of about 50% rabbits, 30% Townsend ground squirrels, 12% reptiles and an assortment of other small rodents and birds.

Townsend ground squirrels and pocket gophers each comprised about 45% of ferruginous hawk diets, with cottontails and reptiles running a distant third and fourth respectively with less than 5% each.

Having identified what the young birds and nesting adults were eating, researchers set out to determine how far from the nests and in what habitats the prey were being captured.

To casual observers, the land adjacent to the Snake River canyon rim appears to be vegetated from horizon to horizon with homogeneous, monotonous stands of sagebrush and grass. To the discerning eye, however, the study area contains a complex mosaic of vegetative communities. North of the river, mixed associations of big sagebrush, white sage, shadscale and bud sage predominate over a characteristic understory of Sandberg bluegrass and cheatgrass. On the generally shallower soils south of the river, greasewood dominated plant communities are most characteristic.

The study area contains one of the largest single stands of white sage in North America. This shrub's high protein content, palatability and tolerance to heavy winter grazing make it an especially important source of forage for domestic livestock.

The highest concentrations of Townsend ground squirrels were found in white sage and white sage/big sage communities. Researchers found that jackrabbits preferred the sagebrush habitats. All of these shrubs prefer the deeper, more finely textured soils also preferred by burrowing ground squirrels and, by farm developers.

Irrigated farmland within the study area was found to be the preferred habitat of several minor prey species, including ring-necked pheasants, various small birds and pocket gophers.

Researchers found that land cultivated for row crops produced few jackrabbits or Townsend ground squirrels. In areas newly developed for farming, land preparation and cultivation eliminated Townsend ground squirrel populations. In well established farming operations, alfalfa, which is not intensely cultivated, was the only crop that allowed ground squirrels to exist. On private land, farmers regularly control ground squirrels in alfalfa fields to prevent squirrels and predatory badgers from digging burrows which can hinder farming operations.

To determine hunting territories and habits, adult golden eagles, prairie falcons and red-tailed hawks were captured and fitted with miniature radio transmitters. As the birds left their nests to hunt

Graham Smith

Al Bammann

In the spring, the visually dominant blue-gray shrub overstory of the Snake River Birds of Prey Study Area is complemented by an understory of emerging green grasses and daubs of brightly colored, short-lived desert wildflowers.

Graham Smith

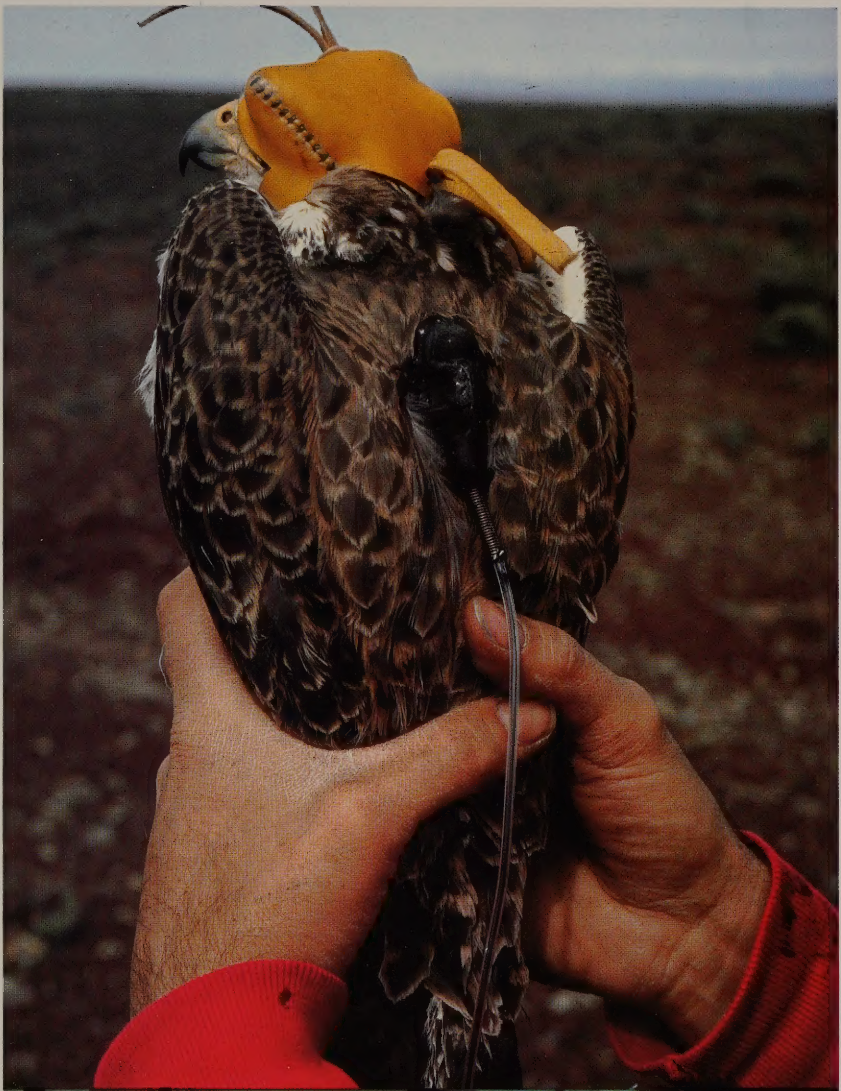
they were tracked with ground and aerial receiving equipment.

Radio-tagged golden eagles were monitored ranging about four miles from their nests. They hunted both north and south of the canyon, predominantly in relatively close proximity to the canyon rim and in side draws with shrub-grass habitats preferred by jackrabbits, their primary prey.

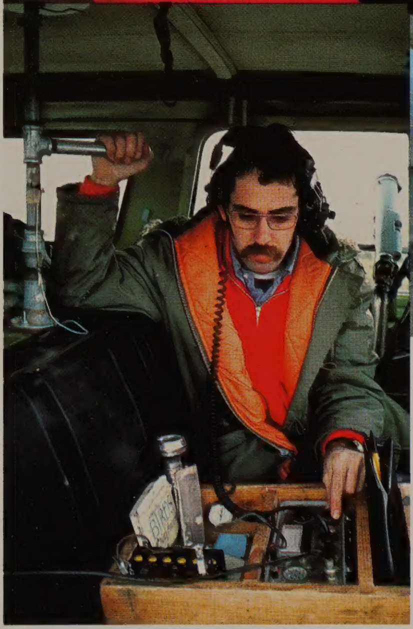
Monitored red-tailed hawks exhibited hunting patterns similar to those of eagles. They usually ranged about three miles from their nests, both north and south of the canyon. Like eagles, red-tails soared for up to an hour at a time, principally over shrub-grass habitats to locate their prey. They also still hunted from perches on rocks, canyon rims, trees, shrubs and power line crossbars.

The radio-tagged prairie falcons demonstrated hunting ranges, flight patterns and hunting strategies dramatically different from those of the eagles and red-tails. The prairie falcons' high-speed hunting forays regularly extended up to fifteen miles from their nests over the shrub-grassland habitat of Townsend ground squirrels which comprise the bulk of their diet.

Except for one small, isolated population south of the river, Townsend ground squirrels are only found north of the canyon. The largest populations are located at least six miles beyond



Thomas Dunstan

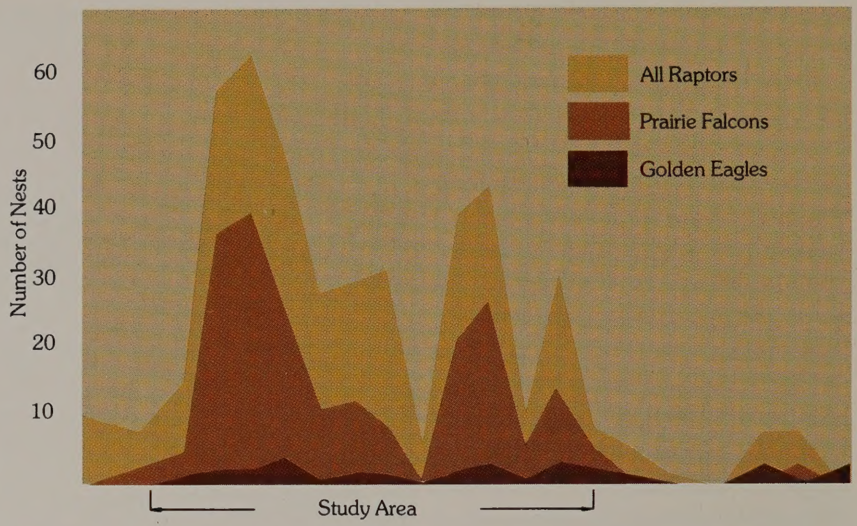


James F. Harper

James F. Harper

the canyon rim. Unlike golden eagles, prairie falcons are not rigidly territorial, often nesting in comparatively close proximity to one another. This concentration leads to intense competition for nearby Townsend ground squirrels among the large number of prairie falcons as well as with other raptors.

The complex birds of prey ecosystem jigsaw puzzle was now complete. Nesting density studies revealed the nest sites. Analysis of selected study nests identified how much of what kinds of prey were required for successful reproduction and rearing of young. Prey habitat studies pinpointed shrub-grasslands, particularly those dominated by an overstory of big and white sage, as the principal producers of preferred prey. Radio tracking documented raptor hunting ranges.

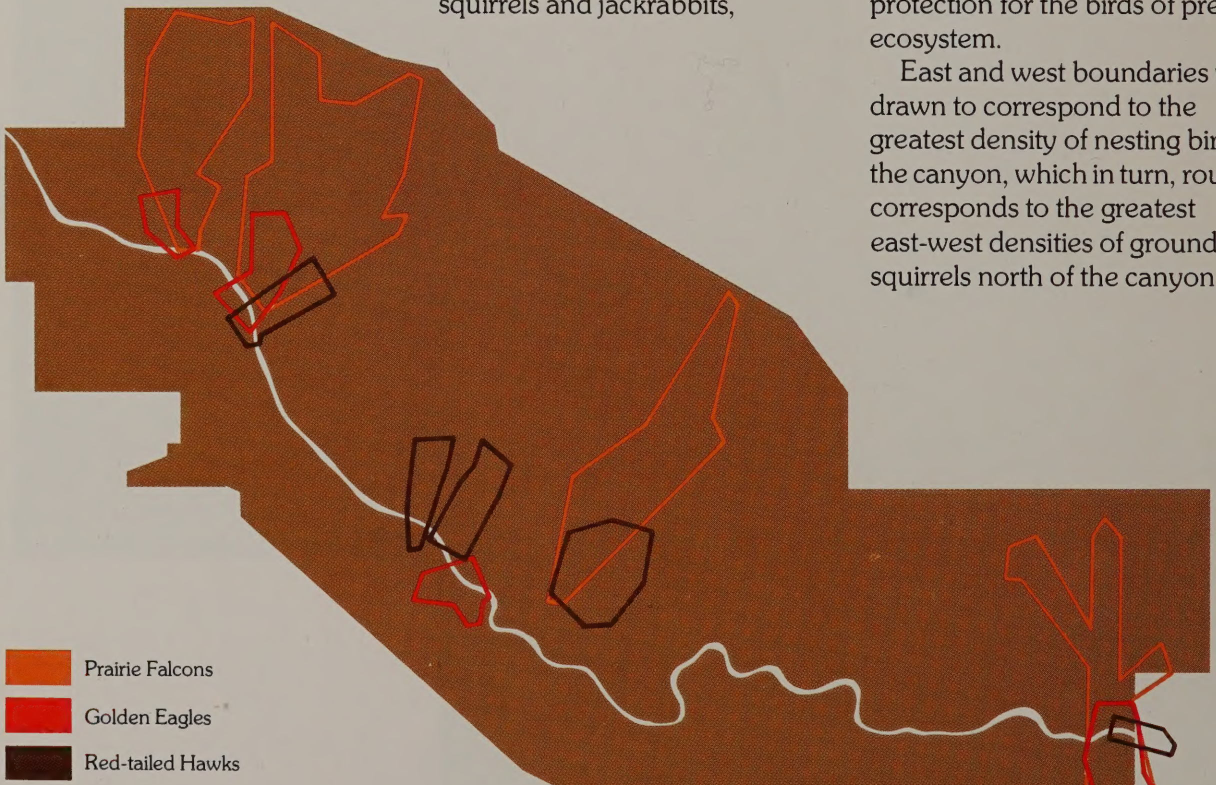


Distribution of occupied birds of prey nests in a 120-mile reach of the Snake River canyon.

In short, the unique nesting population of birds of prey was the product of (1) abundant canyon nesting eyries within (2) hunting range of (3) abundant prey, particularly Townsend ground squirrels and jackrabbits, produced in (4) shrub-grassland habitats.

These four major, interlocking factors provided researchers with the corner posts for drawing a proposed boundary around sufficient nesting and hunting habitat to provide permanent protection for the birds of prey ecosystem.

East and west boundaries were drawn to correspond to the greatest density of nesting birds in the canyon, which in turn, roughly corresponds to the greatest east-west densities of ground squirrels north of the canyon.



Key Radio-monitored Hunting Ranges

James F. Harper

Even though ground squirrel populations extend some thirty miles north of the canyon rim to the foothills, the ecosystem's northern boundary was limited to the radio-monitored prairie falcons' fifteen-mile hunting range.

South of the canyon, the monitored hunting ranges of golden eagles and red-tailed hawks were used to help establish the boundary, even though their preferred prey is also found much farther out into the desert.

In mid-1979 the Bureau submitted to Secretary Andrus its research findings, the resultant proposed ecosystem boundary, management plan and proposed legislation to provide permanent protection for the birds of prey and their public land nesting and hunting habitats.

The Bureau proposed that Congress be requested to amend Title VI of the Federal Land Policy and Management Act of 1976 (FLPMA) to establish the Snake River Birds of Prey National Conservation Area. The proposed conservation area would encompass approximately 720,000 acres along an eighty-one mile reach of the Snake River, including about 515,000 acres of public land administered by BLM.

The diminutive Townsend ground squirrels are the primary mammalian fuel of the Snake River birds of prey ecosystem. They play important roles in the diets of all raptors in the area, and are critical to prairie falcon reproductive success.

NASA LANDSAT

Bill Mullins

The proposed Snake River Birds of Prey National Conservation Area would encompass approximately 720,000 acres of which 515,260 are publicly owned lands managed by the Bureau of Land Management.

FLPMA was considered the ideal legislative vehicle for the proposed birds of prey conservation area. It would provide for permanent retention of the public lands in public ownership for benefit of birds of prey, yet allow the management flexibility to continue the many compatible traditional public uses of the area.

Within an hour's drive of the major Idaho population center, lands within the proposed conservation area boundary provide, and would continue to provide, a wide variety of recreational opportunities including fishing, hunting, camping, boating, birdwatching and sightseeing.

There are few valuable minerals within the proposed conservation area, but there are several sand, gravel and cinder recovery operations within the proposed boundary. Existing mining claims, leases and permits would not be affected by establishing the proposed conservation area; future entry, location and patent to private ownership of public lands under the Mining Law of 1872 would be prohibited. Any locatable minerals could be mined under lease arrangements with the Secretary of the Interior. Land within the conservation area could also be leased under the Mineral Leasing Act and Geothermal Steam Act with stipulations designed to protect environmental values.

Virtually all public land within the proposed birds of prey conservation area is grazed by domestic livestock, primarily as spring, fall and winter range. Sixty-six grazing permittees annually obtain approximately 65,000 animal unit months of forage from the area as an integral part of their year-round cattle and sheep operations.

These grazing privileges would not be affected by establishment of the birds of prey conservation area.

Research and the long-term stability of the birds of prey population demonstrate that livestock grazing and raptors are compatible. Indeed, by seasonally reducing the density of the shrub overstory, livestock make ground squirrels and other small mammals more vulnerable to birds of prey. This is a symbiotic relationship; preserving the shrub-grassland prey base for raptors also preserves grazing land for livestock.

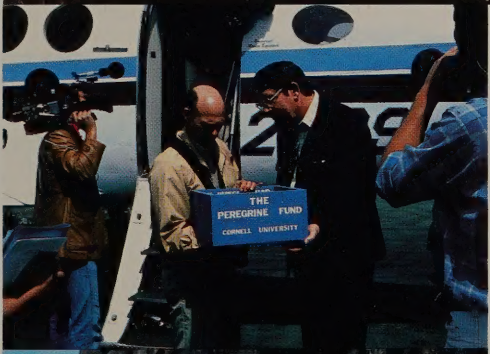
One of the principal findings of the years-long research effort was that farming additional publicly-owned shrub-grasslands within the proposed conservation area was not compatible with maintaining the nesting population of raptors.

Thomas Dunstan

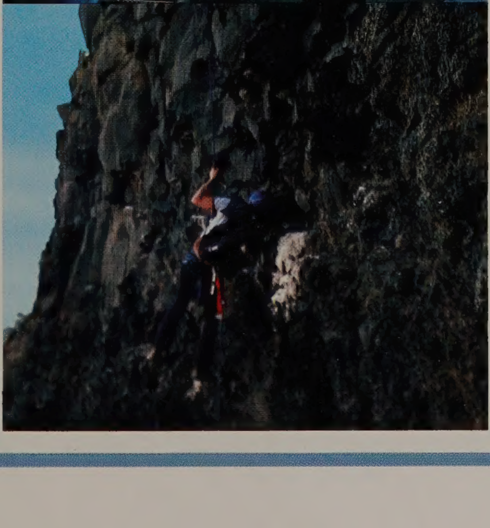
Thomas Dunstan

Livestock are typically brought into the birds of prey study area north of the Snake River in early spring for about two and one-half months and then are trailed and/or trucked to national forest or private lands for the summer. They are returned to the area in mid October to graze fall ranges until mid December, then moved to winter ranges until the end of February. At that time, they are trailed to their home ranches until the cycle begins again in the spring.

Dave Boehlke



Michelle Hudson



Bill Burnham

In 1977, the Snake River Birds of Prey Natural Area was chosen as the site of a unique experimental "cross-fostering" effort to help rebuild populations of the endangered peregrine falcon.

Peregrine falcons have long been considered one of the most beautiful and spectacular birds of prey. They prey predominantly on birds which they capture in mid-flight with dramatic dives at speeds reaching more than 200 miles per hour.

The name peregrine means "pilgrim hawk" — the wanderer, and one tundra subspecies lives up to the name by annually migrating from the north slope of Alaska as far south as central South America.

Peregrines were once comparatively numerous in the United States. They were exterminated in the eastern states. The current population within the coterminous states is estimated at about fifty pairs. The primary factor in this dramatic decline is believed to be the widespread use of persistent pesticides, particularly DDT, which build up in the peregrine's food chain and adversely affect reproductive success.

In 1977, 1978 and again in 1979 young peregrines reared in captivity at Cornell University facilities in Fort Collins, Colorado under the auspices of the Peregrine Fund were brought to the Snake River canyon and placed in prairie falcon nests. The purpose of the experiment was to determine if adult prairie falcons, which are very similar in appearance and behavior to peregrines, would rear the young peregrines to flight and ultimately, to become productive breeders in the wild.

Researchers hope some peregrines successfully reared by their prairie falcon foster parents in the Snake River canyon will return to the area to nest, further enhancing the many values of the unique birds of prey ecosystem.

Rick Kline

Rick Kline

Michael N. Kochert

Rick Kline

A large number and variety of owls inhabit the Snake River birds of prey area. These nocturnal counterparts of the diurnal hawks, eagles and falcons are among the most economically useful birds to man. Their preferred prey is small rodents. Owls' very large eyes and fluffy feathers enable them to locate and swoop silently down upon their prey under cover of darkness.

Gus Wolfe

During incubation and early nestling periods the male bird of prey does virtually all the hunting while the female tends the nest. The male's hunting prowess is taxed to the maximum. He must provide for himself, his mate and the voracious young birds, each of which may require as much or more food than an adult. If there is any shortage of prey, one or more of the young birds may starve or weaken and succumb to parasites, inclement weather or any of a host of natural causes.

Therefore, all public lands within the proposed conservation area would be withdrawn from application, selection, entry or patent to private ownership under public land disposal laws commonly called the Desert Land and Carey Acts.

More than 159,000 acres of irrigated crop land have already been developed within the proposed boundaries. As much as 100,000 additional acres of public land within the area, predominantly north of the canyon, are under application for private development.

These filings are understandably on the best soils. These soils and their shrub-grass vegetative communities support the greatest variety and numbers of prey for raptors. Conversion to irrigated farmland would eliminate nest sites for ground nesting birds of prey such as marsh hawks and short-eared and burrowing owls. More importantly, it would essentially eliminate the habitat of critical prey such as Townsend ground squirrels and jackrabbits.

Depending upon the extent of new agricultural development, raptors such as golden eagles and red-tailed hawks, which utilize a variety of prey, could shift a portion of their diets to other species. With their specialized diet of Townsend ground squirrels, however, prairie falcons could be severely impacted.

There is a direct relationship between the abundance of Townsend ground squirrels and prairie falcon reproductive success. Townsend ground squirrels are subject to dramatic population declines due to climatic variations, particularly drought, which reduces the amount of succulent forage and therefore, ground squirrel reproduction. A major drought during late 1976 and early 1977, for example, reduced 1978 Townsend ground squirrel populations within the study area by 65% compared with 1976 levels.

During 1971-76, years of comparatively large ground squirrel populations, an average of 2.8 fledglings were produced by each nesting pair of prairie falcons. In 1978 the average was 1.6 fledglings per nesting pair, a 57% reduction. A total of 631 prairie falcons were fledged in 1976 compared to 289 in 1978.

The overriding goal of the Snake River birds of prey research effort was to determine the amount of habitat required to

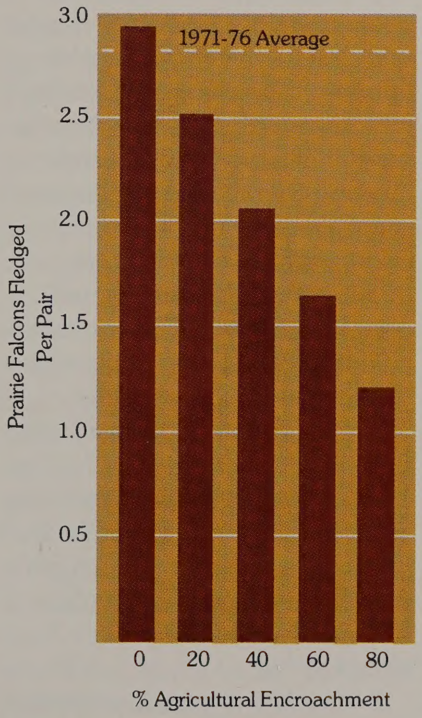
Bill Burnham

Life can be tough for young birds of prey even under the nearly ideal conditions present in the proposed Snake River Birds of Prey National Conservation Area. Under conditions of average prey abundance, for example, an average of 86% of all young prairie falcons survive to flight. During years of low prey abundance such as 1978, however, only 67% survived. Researchers believe that any significant reduction in existing shrub-grassland prey habitats north of the canyon would make it virtually impossible to maintain the current nesting population.

sustain the unique nesting population of raptors over the long term, including recurring years of worst-case conditions.

Therefore, the northern boundary of the proposed conservation area was drawn to encompass sufficient prey habitat to maintain prairie falcon reproductive success during years of average prey abundance and allow it to recover from years of low prey density such as 1978.

Researchers developed computer simulations to test the sensitivity of prairie falcon reproductive success to farming encroachment within the proposed conservation area. Even during years of high prey abundance such as 1976, the computer projected the average annual production of young birds could not be sustained if as little as an additional 8% of the publicly-owned shrub grassland within the area were converted to irrigated farmland.



Computer simulation of the impact of additional agricultural development within the proposed conservation area upon prairie falcon reproduction.

Fortuitously, the land filed upon within the proposed birds of prey conservation area comprises less than 15% of the acreage in southern Idaho applied for under the Desert Land and Carey Acts.

More than 2 million acres of public land in Idaho have already been converted to private ownership under these offsprings of the original Homestead Act. Crops grown on these lands support productive, growing communities that are the backbone of Idaho's renowned agricultural economy.

Virtually all easily irrigated lands in southern Idaho have long since been developed, but another 700,000 acres or so have been filed upon under the two public land disposal laws.

Concurrent with the birds of prey research, the Bureau developed a draft environmental statement which analyzed the implications of converting to private farmland approximately 111,000 acres of public land adjacent to the proposed conservation area.

Most new land adjacent to and within the proposed conservation area would have to be irrigated by pumping water hundreds of feet up from the Snake River. This would entail large capital investments and significant quantities of electrical energy. These costs have raised questions about the economic feasibility of bringing new land into production.

It is very difficult to quantify these costs. Nonetheless, the best estimate available to date suggests irrigating the roughly 111,000 acres of public land adjacent to the proposed birds of prey conservation area would annually require generating approximately 500 million kilowatt-hours of electricity.

Bill Meiners

If the private utility serving southwestern Idaho constructed a new generating plant to meet this new demand, the energy produced would cost approximately $60 million 1977 dollars per year. Under the current rate system, this cost would be apportioned among all the utility's customers. Irrigators bringing the new land into production and creating the demand for the new supply of electricity would pay approximately $8 million, or about 13% of the total annual cost; $47 million or 78% would be paid by all other ratepayers; the remainder would be paid by off-irrigation season sales to other utilities.

These costs would translate into a public energy subsidy of $420 per acre per year, or about a $90 per year increase in the average Idaho residential ratepayer's electricity bill.

If the utility were able to enter into a joint venture with another company to obtain the required electricity only when needed during the irrigation season, the energy subsidy could be reduced to approximately $140 per acre or a total of about $16 million annually. Residential rate increases would also be proportionately less.

Even though the bulk of the energy costs required to develop these the new lands would be borne by the general public in Idaho, the remaining costs borne by the new irrigators would have a depressing effect on their net farm incomes.

The two energy production options discussed above would, for example, result in roughly $19,000 - $23,000 annual energy costs for a typical new 320-acre farm adjacent to the proposed conservation area.

In addition to increases in their own power bills, existing irrigators in southern Idaho would be impacted at the marketplace by the conversion of additional public land to irrigated agriculture. For

Wally Meyer

The legendary Oregon Trail was the primary route of land-hungry settlers headed for the Oregon Territory in the mid 1800's. A portion of the main route and the south alternate route of the trail traverse the length of the proposed Snake River Birds of Prey National Conservation Area. The arid climate has remarkably preserved ruts cut into the deep desert soils by wagon trains. In many areas, the ruts have been eliminated by farming and other man-made developments. All existing ruts are eligible for listing on the National Register of Historic Places.

example, it has been estimated that within five years, the 111,000 acres of public land being evaluated for potential development adjacent to the birds of prey area would produce, among other crops, approximately 750 million pounds of potatoes. All other factors remaining equal, this new production could reduce farm level potato prices nationwide by more than one-third. At 1978 prices, many Idaho farmers sold their potatoes for less than the cost of production.

There are other direct costs associated with converting additional public lands in southern Idaho to private farmland. The 111,000 acres are grazed by domestic livestock as integral parts of private ranching operations. Grazing would be directly eliminated on about 111,000 acres and hindered and/or jeopardized on a far greater area. These reductions could make it economically impossible for many livestock operators to stay in business.

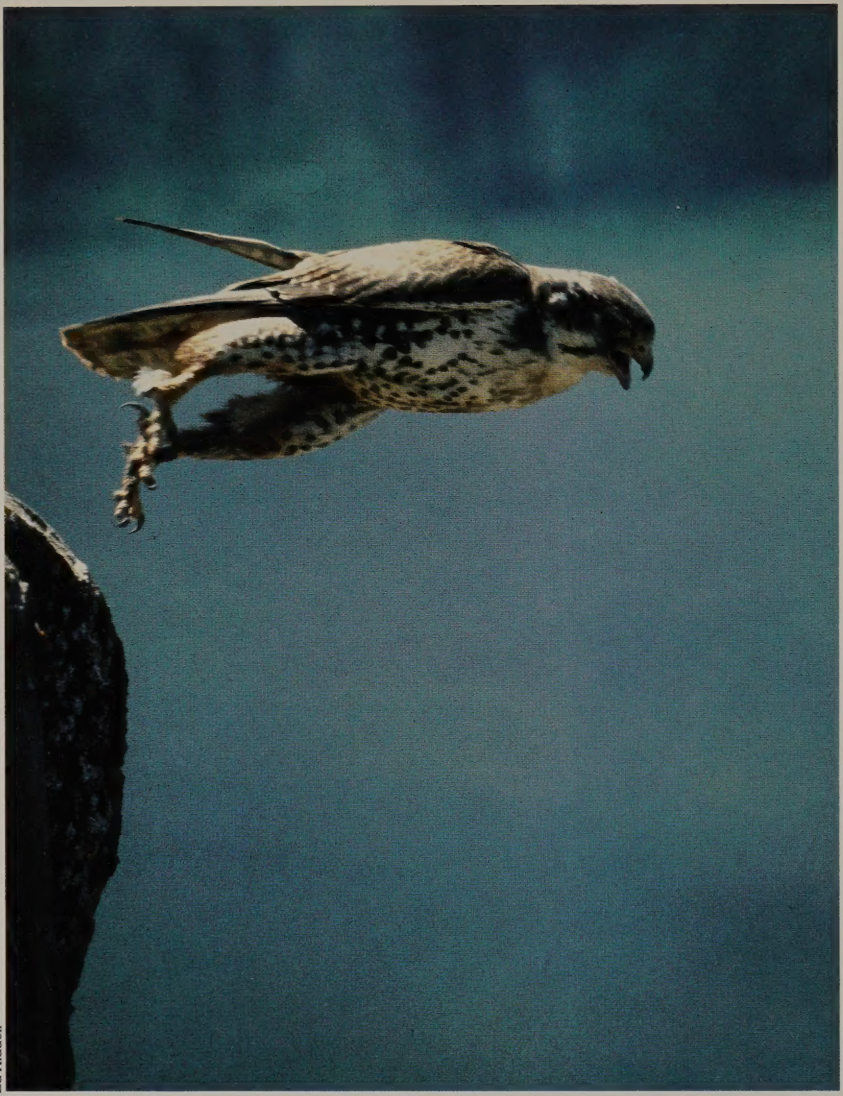
These representative costs suggest there are potentially significant unresolved questions about the social and economic tradeoffs associated with converting additional public land in southern Idaho to private farmland. If these questions are ultimately resolved in favor of additional development, there are more than 600,000 acres of public land in southern Idaho outside the boundaries of the proposed birds of prey conservation area already applied for under the Desert Land and Carey Acts. This acreage and much more is potentially available for agricultural development should it prove to meet the test of the Federal Land Management and Policy Act as being "in the national interest."

Golden eagle/Gus Wolfe

He clasps the crag with crooked hands;
Close to the sun in lonely lands,
Ring'd with the azure world, he stands.

The wrinkled sea beneath him crawls;
He watches from his mountain walls,
And like a thunderbolt he falls.
—Tennyson

A Partnership Approach


Ed Riddell

Prairie falcons are magnificent, irascible creatures possessing a fierceness vastly disproportionate to their size. They harry unmercifully much larger hawks and eagles trespassing the air space around their eyries.

While courting mates, prairie falcons often perform extraordinary aerial acrobatics in full cry. Even after assuming the demanding responsibilities of parenthood, adult prairies often indulge in breathtaking aerial play in sheer exultation of life.

Slightly smaller than the look-alike peregrine falcon, prairie falcons are almost as fast in flight and capable of catching the fleetest birds on the wing. At approach speeds in excess of 100 miles per hour, prairies can overtake the wariest Townsend ground squirrels before they realize danger is awing.

The opportunity to preserve an entire, dynamic ecosystem supporting the densest known nesting population of raptors in the world, has captured the interest of the international scientific community and the public in the United States and many foreign nations.

As the government agency responsible for administering the public lands which support this ecosystem, the Bureau of Land Management has been primarily responsible for funding and coordinating research and management activities. But the proposed Snake River Birds of Prey National Conservation Area is the product of a unique, long-term partnership between the Bureau and many private citizens, Idaho county and state governments, local, national and international citizen and scientific organizations, colleges and universities, independent scientists and several other agencies of the Federal government.

The proposed conservation area has deep roots in the concern of Idaho citizens who first recognized and appreciated the values of the area's birds of prey almost forty years ago.

From those early beginnings eventually grew what has become recognized as the most intensive, comprehensive birds of prey research effort in history.

As the research progressed, it became apparent the Snake River canyon and adjacent steppe supported a self-contained birds of prey ecosystem of extraordinary proportions. It was prominently featured at the 1975 Vienna, Austria meeting of the International Council for Bird Preservation which represents forty-six nations. And again at the world meeting on conservation and falconry in Abu Dhabi on the Persian Gulf. The study area and research program drew scientists from throughout the world to Boise — Idaho's capital city — for an international conference sponsored by the Raptor Research Foundation.

Major motion picture and television productions, television network newscasts, public service announcements and a host of magazine and newspaper articles have introduced the Snake River birds of prey area to more than half a billion people throughout the world.

As knowledge of the area and ongoing research effort spread far beyond the scientific community, it drew expressions of support from throughout the U.S. and many foreign countries. Students and teachers from colleges and universities as far away as the University of Oslo, Norway came to the area as volunteer research assistants and interns.

Local landowners holding title to key parcels of private land within the study area have exchanged their inholdings for public land elsewhere to facilitate permanent protection and management of the area for birds of prey.

The Nature Conservancy, a private nonprofit citizen's organization dedicated to acquisition and management of ecologically significant lands, embarked upon a major national and international campaign to raise money to purchase and manage additional key private lands within the birds of prey area. Most of these lands are scheduled for eventual transfer to public ownership upon establishment of permanent Federal protection for the birds of prey ecosystem. By the beginning of 1979, contributions from school children, corporations, foundations and citizen organizations throughout the U.S. and abroad reached the Conservancy's goal of $500,000.

All this private, public and governmental support for the effort to understand and preserve the birds of prey ecosystem has played a major role in formulating the proposed Snake River Birds of Prey National Conservation Area.

Jack Lynn

In the spring of 1978, Interior Secretary Andrus, his assistant Chris Carlson, actor-conservationist Robert Redford and other Idaho and national dignitaries rafted through the birds of prey study area to support The Nature Conservancy fund-raising drive.

The first phase of the research effort, completed in 1978, demonstrated and quantified the complex, inseparable interrelationship between the extraordinary number of raptors nesting in Snake River canyon eyries and their prey inhabiting arid shrub-grasslands beyond the canyon rim. In so doing, it defined the minimum amount of public land required to sustain the

Idaho Governor John V. Evans with Muffin, an orphaned prairie falcon from the Snake River Birds of Prey Study Area. Researchers found Muffin out of her nest and near death when she was about six weeks old. After she was nursed back to health, Muffin became mascot of the BLM Boise District. At age one she began starring in environmental education programs called "The Muffin Shows." Her proud, independent spirit endeared her to thousands of school children and adults. Muffin died unexpectedly at age two and one-half years. Her passing was memorialized on the front page of Idaho's largest daily newspaper. The Idaho Governor's office was flooded with phone calls and letters of mourning.

Fred Cook

nesting population of raptors over the long term.

Importantly, it also demonstrated that retaining these lands in public ownership under multiple use management for domestic livestock grazing, recreation and all other traditional uses, was compatible with protecting the birds of prey. Only the conversion of additional land within the area to private irrigated agriculture need be precluded. And there is an abundance of public land elsewhere in southern Idaho far in excess of available water for irrigation development.

In mid-1979 BLM submitted the research findings, proposed conservation area boundary, management plan and proposed legislation to Secretary Andrus for approval and submission to the President and the Congress.

If the proposed Snake River Birds of Prey National Conservation Area meets with Secretarial, Presidential and congressional approval, 515,260 acres of public land will be permanently retained in public ownership for the principal purpose of preserving the birds of prey ecosystem.

The proposed legislation would also authorize a second phase of research which would lead to development of a long-term, comprehensive multiple-use management plan for the conservation area. The goal would be to ensure protection for the nesting population of birds of prey while optimizing the multiple public uses of the area.

If established, the proposed conservation area is expected to become a focal point of national and international raptor research. A primary objective of the long-term management plan is to expand and enhance public use and appreciation of the many biological, paleontological, geological, archaeological and historical values that combine to make the public lands within the proposed Snake River Birds of Prey National Conservation Area a unique, irreplaceable part of our nation's heritage. ○

☆GPO 698-579

Juvenile prairie falcon/Rick Kline

Produced for the Bureau of Land Management by
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UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation.

The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.